

ABSTRACT OF THE DISCLOSURE

5 A modulator, and demodulator, apparatus and method for use in a multiple sub-channel communication system is taught. A commutator is employed for fractionally sampling, or distributing, signals from, or to, a multiple channel polyphase filter. The filter is coupled with a discrete Fourier transform, or its inverse, such that the relationship
10 between the base-band sampling rate of a plurality of sub-channel signals, the frequency spacing of the sub-channel signals, and the sampling rate of a composite signal can be related by any rational number, thereby freeing designers to optimize system design respecting channel spacing, bandwidth, and signaling rates. The advantages of the present invention are realized by adjusting the interpolation and decimation rates of the filter, and by adjusting the resolution and decimation rates of the transform.